

## Activity 4

### Effects of Plate Tectonics

#### Think About It

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- Why are most high mountain ranges located at or near plate boundaries?



# WHAT DO YOU THINK?

## Activity 4

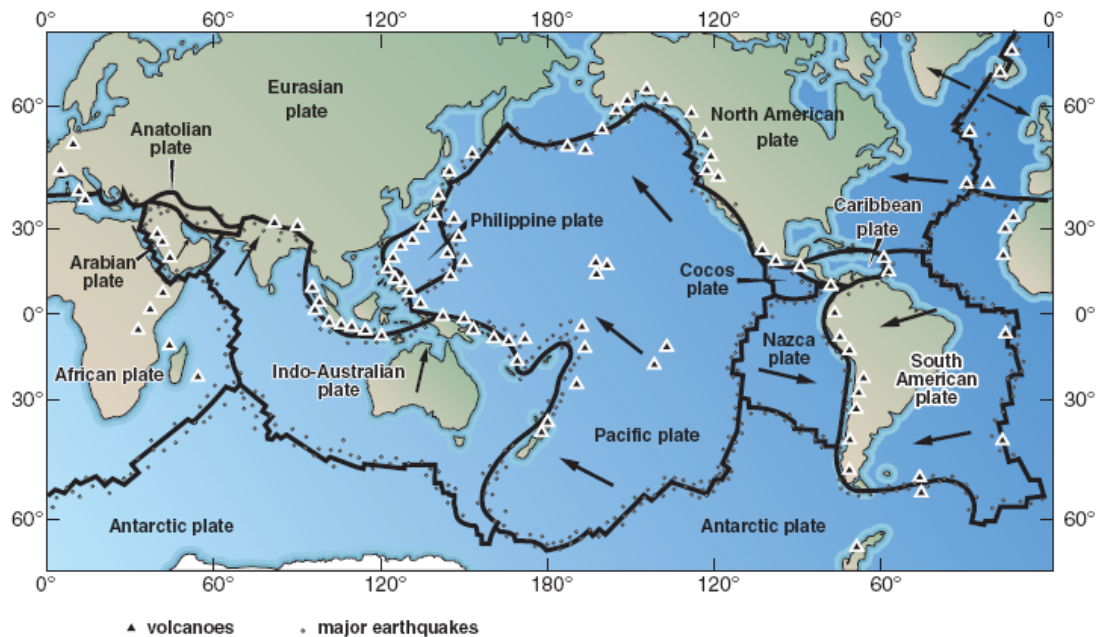
### Effects of Plate Tectonics

#### Investigate

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1a. Describe any differences between the distribution of volcanoes along plate boundaries and within plate interiors.

1b. Describe any differences between the distribution of earthquakes along plate boundaries and within plate interiors.

2a. What does the honey represent?

2b. What does the vegetable oil represent?

2c. Describe and explain the behavior of the vegetable oil.

4a. Under what two types of plates is the oceanic lithosphere being subducted?

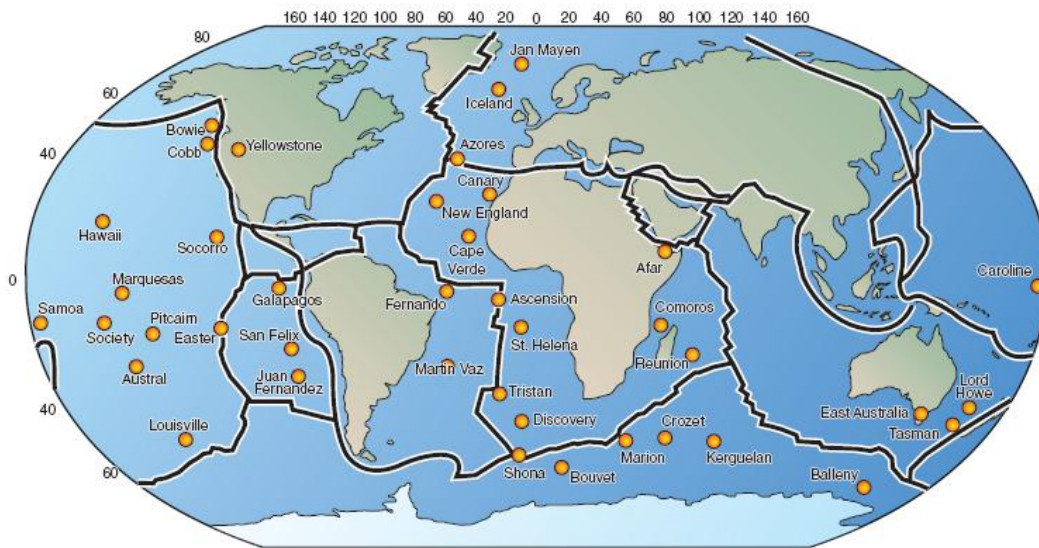
4b. What differences between oceanic volcanic arcs and continental volcanic island arcs can you see or infer from the cross section?

4d. In which part of the world are most volcanic arcs located? What does that suggest about the plate-tectonics setting of that part of the world?

5a. What is the shape of the line on the globe?  
Why are lines of volcanoes called arcs?

5b. Explain why few volcanoes occur very far inland within a continent.

5c. If volcanic rock is found far inland within a continent, what is one possible reason why it is there?



6a. Where does it appear that the hot spot originated?

6b. Is it related to subduction?

6c. Where does the hot spot begin to produce a pool of magma?

7a. Where are most hot spots?

7b. Are they clustered or randomly located?

7c. What famous area of the continental United States sits over a hot spot?

7d. What sits atop another famous hot spot in the United States?

## Activity 4

### Effects of Plate Tectonics

#### Digging Deeper

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#### Plate tectonics

the study of plate motion

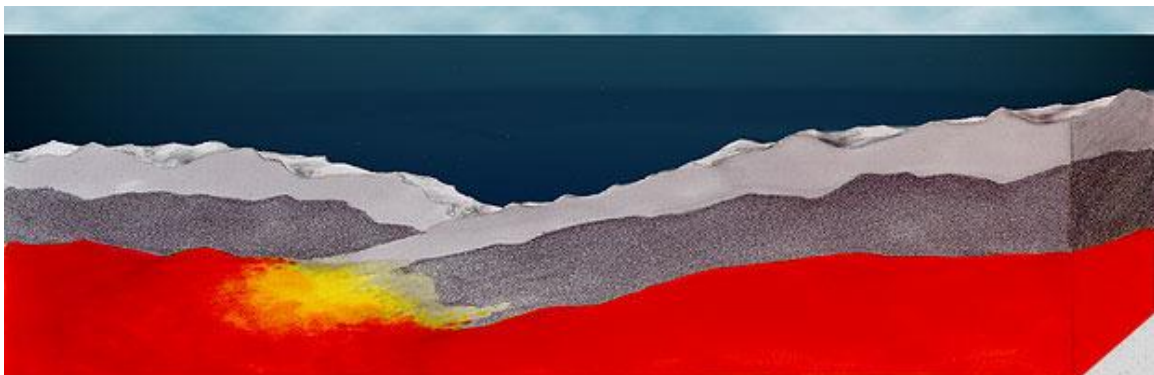
Plate movements create:

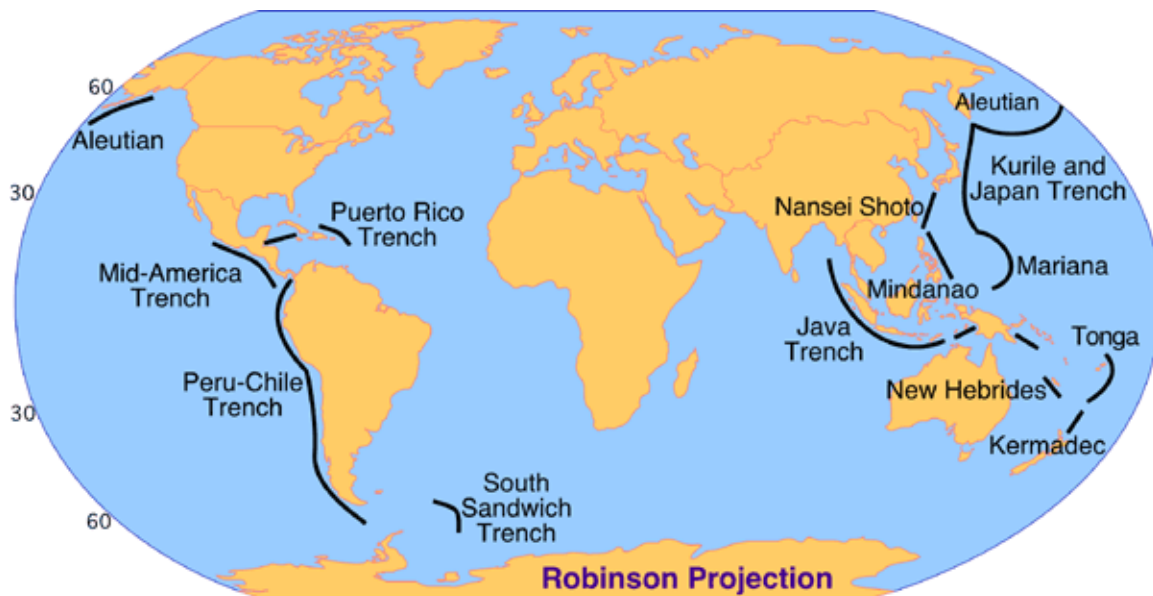
- mountain ranges
- trenches
- rift valleys
- volcanoes
- mid-ocean ridges

Oceanic trenches

form where an oceanic plate is subducted under another plate

The trench is the valley that forms as the plate enters the subduction zone

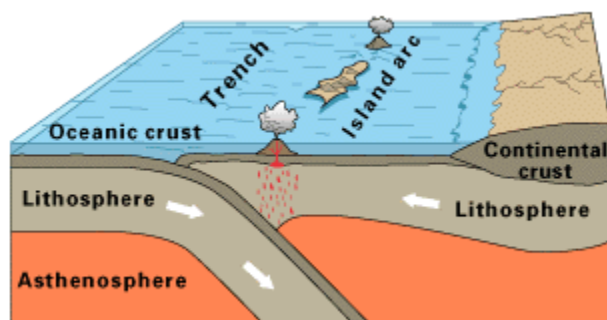
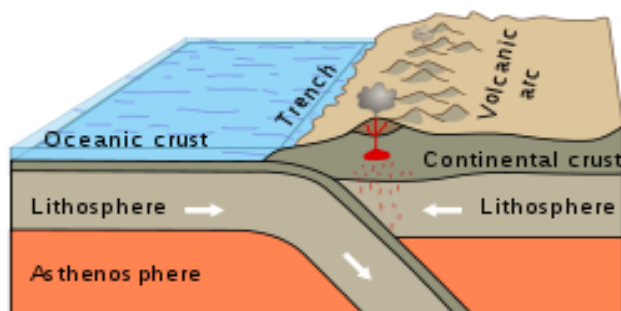




## Volcanoes

are common along mid-ocean ridges and subduction zones

They form volcanic arcs at ocean-continental and ocean-ocean subduction zones

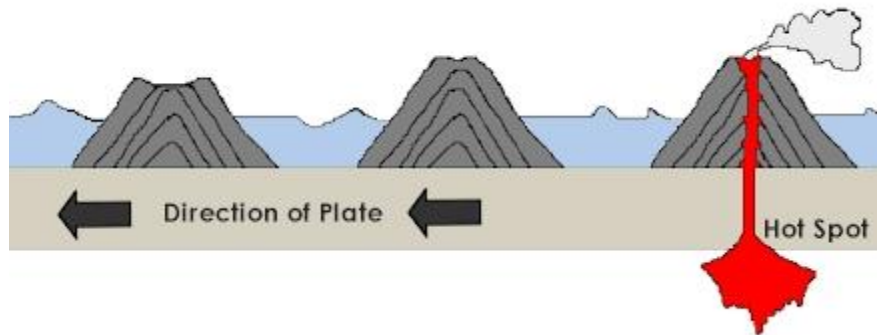


The “Ring of Fire” around the Pacific Ocean is caused by subduction zones all around the Pacific



Hot spots

a stationary area of rising magma that breaks through Earth's crust to form volcanoes



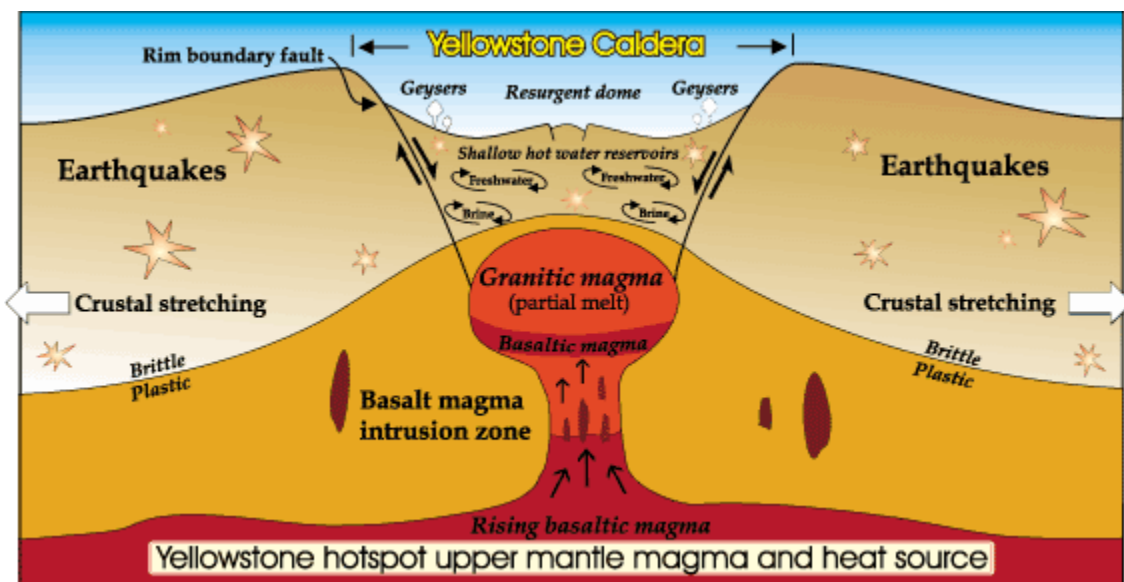
[http://www.wwnorton.com/college/geo/egeo/flash/2\\_10.swf](http://www.wwnorton.com/college/geo/egeo/flash/2_10.swf)

Locations of hot spots

some are located under continents

Example

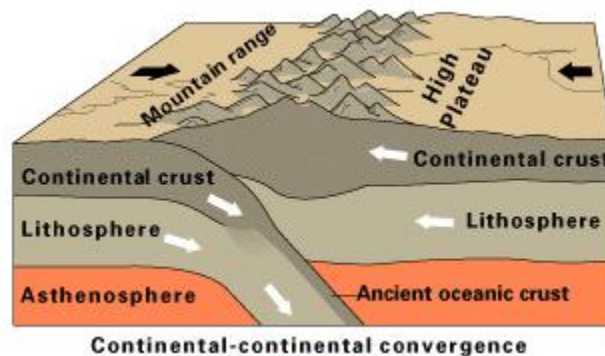
Yellowstone





Mountain ranges are mostly located where two continental plates are colliding

This causes masses of rock to be pushed together and stacked on top of one another, forming high mountains



[http://highered.mcgraw-hill.com/sites/0072402466/student\\_view0/chapter19/animations\\_and\\_movies.html#](http://highered.mcgraw-hill.com/sites/0072402466/student_view0/chapter19/animations_and_movies.html#)

Earthquakes are common along the mid-ocean ridges

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Effects of Plate Tectonics  
**Check Your Understanding**

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1. Why is plate tectonics a suitable name for the study of plate motion? Explain.

2. What geographic features would you expect to see at plate boundaries?

3. How do geoscientists suggest that “hot spots” are related to plate tectonics?

4. In your own words explain the process of continental accretion.

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Effects of Plate Tectonics  
**Understanding and Applying**

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1a. Summarize where most earthquakes are located compared to plate boundaries.

1b. Summarize where most volcanoes are located compared to plate boundaries.